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The violence prevention climate of mental health wards: A cross-sectional study of staff and patient views

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Abstract

Purpose: Ward climate can shape the behaviour of both staff and patients. A subset of the ward climate is the violence prevention climate, the unique characteristics that are perceived by the people within the environment as contributing towards the prevention of violence. The aim of this study was to explore differences between and within staff and patient groups in terms of their perceptions of the violence prevention climate.

Methods: A cross-sectional survey was conducted with staff (*n*=326) and patients (*n*=95) in mental health care pathways within one charitable trust. All participants completed the VPC-14 to measure perceptions of the violence prevention climate, a validated 14-item two-factor scale (*staff actions* and *patient actions*). Staff demographic information was collected on the VPC-14 front sheet; patient demographic, clinical and violence data was collected from electronic case records. Bivariate analyses were conducted to compare within- and between- group variables. Significant staff and patient variables were entered into multiple hierarchical regression analyses to assess their relationship with VPC-14 factors.

Results: Staff had a more positive view than patients of staff actions and patients had a more positive view of patient actions than did staff; staff- or patient- group membership was the best predictor of staff action scores. Individual staff characteristics accounted for a small amount of the variance in staff and patient action scores; individual patient characteristics explained more variance, but this was still below 20%.

Conclusions: Staff perceive their violence prevention-related contributions more positively than patients and vice versa. This has implications for staff; they may need to better articulate their role in violence prevention to patients, as well as recognise the role that patients play. However, within staff and patient groups, individual variables only make up a small amount of variance of perceptions of the violence prevention climate. This suggests that the violence prevention climate is a valid construct i.e. that despite differences in individual variables, individuals within the patient group have similar perceptions of the VPC, as do those within the staff group.

Keywords

Therapeutic milieu, Violence, Violence prevention climate, Ward atmosphere, Ward environment

Introduction

Behaviour is shaped by how the environment is perceived [1], therefore the environment may affect individuals differently depending on their perceptions. Moos [2] suggests that social change, particularly in small environments such as a hospital ward, can be facilitated across four stages: 1) ask the individuals to report on how that environment is functioning; 2) identify similarities and differences between the groups within that environment (for example, patients versus staff); 3) plan changes using methods specific to the areas that were rated poorly; and 4) reassess the characteristics of the environment to assess the change process. Similarly, to assess the success of changes within an environment, the views of different groups need to be sought [3]. The differences between the perceptions of staff and patients in relation to the ward climate have long been examined. That staff tend to view the ward climate more favourably than patients is a finding that has been consistently repeated in a variety of settings [2,4-6]. However, not all elements of ward atmosphere are perceived by staff as better; patient cohesion, as measured by the Essen Climate Evaluation Schema (EssenCES) tends to be viewed more favourably by patients than staff [7,8].

A positive ward climate has been associated with positive staff outcomes including lower burnout rates [9], increased job satisfaction [10], and lower levels of perceived stress [11]. Perceptions of ward atmosphere have been linked to the personal characteristics of patients including clinical risk and age [12,13]. However there are actually very few studies examining the relationships between personal characteristics on perceptions of ward atmosphere [12] so it is difficult to confidently determine the role they play. Other personal patient characteristics that may play a role are the inpatient experience, behaviour on the ward, and whether patients are violent or not. A positive patient experience may be associated with a positive ward atmosphere [14]. Disturbed behaviour on the wards has been linked to patient dissatisfaction with the ward environment [15], but this does not explain whether patients who cause the disturbances view the ward environment differently to those who are more settled in their behaviour. Similarly, violent behaviour increases turmoil within the ward atmosphere [16] but Workplace violence has long been acknowledged as an important public health issue globally [17], creating a significant financial burden to organisations [18]. Healthcare workers experience high rates of workplace violence [19] and within healthcare, emergency departments and mental health wards are the most violent [20]. In mental health inpatient settings, violence is just one form of conflict. In such settings, where patients may be held against their will and ward rules can curtail patient freedoms, conflict is almost inevitable. Conflict can arise between and within patient and staff groups and can take many forms. Bowers [21] describes a whole range of conflict events including smoking in no smoking areas, alcohol and substance use, refusing to eat, drink, wash etc., refusing medication, absconding, verbal and physical aggression, and suicide attempts. In response to conflict staff employ

a variety of methods from soft approaches such as de-escalation, to more restrictive containment interventions including intermittent and constant observations, forced intramuscular (IM) medication, seclusion and physical restraint [21]. The most restrictive containment interventions, seclusion, restraint and forced medication, should be last resort measures, used only when there is significant risk of harm and other interventions have failed [22]. Despite this, there is huge variation in the use of restrictive containment interventions in different settings. For example, one NHS Trust reported just 38 annual instances of restraint use, whilst in the same period another reported over 3,000 [23].

Restrictive interventions, particularly restraint, can cause physical and psychological harm to patients and staff, and in the most extreme cases patient death [24]. Whilst reducing restrictive interventions is undoubtedly important, their use continues and is likely to do so for the foreseeable future. Therefore initiatives/programmes also need to explore ways of reducing the harm of such interventions. Again it is unclear how violent behaviour affects perceptions of the ward atmosphere. Differences in the perceptions of ward atmosphere have been identified according to level of security and type of ward [25].

Ward Climate scales, such as the Ward Atmosphere Scale (WAS) [26] and the EssenCES [27] include items that appear to reflect violence prevention interventions, thus suggesting that it is one element of the ward atmosphere or climate. The distinct concept of a 'violence prevention climate' appears to have first been introduced by Spector et al. [28] who describe it from an organisational perspective as employees' perceptions of the policies, procedures and training related to violence prevention, and modelling by supervisors of how interactions should be conducted. However, violence prevention, particularly in hospital settings, comprises a range of actions not only at an organisational level but also at ward level, particularly the actions of the staff and patients on that ward. We define the violence prevention climate as the unique characteristics that are perceived by the people within the environment as contributing towards the prevention of violence. Within mental health settings, there has been little exploration of the violence prevention climate.

The aim of this study was to explore differences between and within staff and patient groups in perceptions of the violence prevention climate.

Method

Design

A cross-sectional survey design was utilised.

Setting and sample

The survey was conducted within mental health care pathways in a charitable trust that provides specialist, secure care for adults of working age, older adults and young people across four sites in the UK. The types of wards where care is provided include open wards, psychiatric intensive care units (PICUs), low secure and medium secure. All patients and staff who met the inclusion criteria were invited to participate. The inclusion criteria for patient participants were: over 18 years of age, willing and able to give informed consent for participation in the study, currently admitted to inpatient mental health services, and English language speakers. Patients' clinical teams advised on whether each participant had capacity to consent to the study, and this was monitored by the researcher during the consenting process and subsequent interview. The inclusion criteria for staff participants were: permanently employed in the clinical setting, having worked on the ward for a minimum two-week period, or being employed by the Charity to work in the clinical setting on a non-regular basis and having a self-expressed knowledge of the ward setting.

Measures

Violence prevention climate

Data about the violence prevention climate was gathered using the VPC-14 [29], a 14-item scale designed to measure perceptions of the violence prevention climate. The VPC-14 is a 14-item two factor scale: i) staff actions (SA) are the primary and secondary violence prevention activities undertaken by staff (nine items) and ii) patient actions (PA), are the violence prevention-related activities of patients (five items). Items are scored on a 5-point Likert type scale from 'Strongly agree' to 'Strongly disagree'. All items are completed by all participants, i.e., staff and patients, resulting in scores that can be conceptualized in a two-by-two contingency table in which both staff actions and patient actions are rated by both staff and patients and can be compared; further, staff actions and patient action ratings can be pooled for comparison across settings. The scale has good psychometric properties; both factors demonstrated good internal consistency (Cronbach's alpha of .89 and .76 respectively) and test-retest reliability in initial testing, and Rasch modelling has shown that both are unidimensional [29].

Demographic and clinical information

Staff demographic information was collected on a purpose-designed schedule; requested information was: gender, age, ward, role (registered nurse vs. health care assistant vs. other) and number of years' experience. Patient-related demographic and clinical data was gathered from the electronic patient record; variables of interest were: gender (male vs. female), age, ethnicity (white vs. other), ward security level (medium vs. low/open), and length of stay. Diagnosis as recorded by the clinical team

using International Classification of Diseases and Related Health Problems (ICD-10) criteria [30] was also gathered. Due to the large number of diagnoses, diagnostic categories were collapsed into the following variables: i) F20-F29 Schizophrenia, schizotypal and delusional disorders; ii) F60-F69 Disorders of adult personality and behaviour; iii) diagnoses of both F20—F29 and F60-69 disorders; and iv) any other diagnosis. An overall clinical impression for the patient was also gathered using the Clinical Global Impressions Psychopathology subscale (CGI-S) [31], a brief, clinician-rated instrument that provides a stand-alone assessment of a patient's current global functioning measured on a 7-point scale. This was rated by the patient's keyworker or, where the keyworker was unavailable, another qualified member of the clinical team who knew the patient well.

Violence and violence-management related data

Narrative details about aggressive incidents recorded each shift by nursing staff on the electronic patient record were extracted and examined by NH. Details were compared with Modified Overt Aggression Scale (MOAS) [32] criteria and categorised as violent or not violent. The MOAS comprises four scales relating to verbal aggression, physical aggression to objects, physical aggression to others and auto-aggression; each is scored in terms of severity on a five-point criterion-rated scale (0=No behaviour of this type to 4=most severe behaviour of this type). Patients in the study were classified as having been aggressive or not in the 12-weeks prior to data collection according to the following criteria: one or more incident of person- or property- directed aggression (i.e. scores of 1+) or any incident of verbal aggression rated 3 or 4 (equating to person-directed aggressive language or a specific threat of violence). Incidents of auto-aggression were not counted as aggression. Information about episodes of restraint and seclusion were collated from the electronic patient record.

Procedure

The study was approved by the hospital's research governance manager, the University of Northampton research ethics committee, and the Nottinghamshire NHS Local Research Ethics Committee (reference 13/EM/0221). Patients were provided with full information about the study and those agreeing to participate were invited to complete the VPC-14 either alone or with assistance of the researcher; additionally, participants gave consent for the research team to access their electronic record to gather demographic and clinical data detailed in 'measures' above. All eligible staff participants were sent a package containing the study materials, a participant information sheet, and a return envelope. No identifying details were collected and consent was taken to be implied by return of the completed questionnaires.

Research questions and related hypotheses

The research questions and related hypotheses guiding this study were:

Question 1. How do staff and patient perceptions of the violence prevention climate, as measured by the VPC-14, differ?

- H1: Staff actions, as measured by the SA subscale, are viewed more positively by staff than patients
- H2: Patient actions, as measured by the PA subscale, are viewed more positively by staff than patients

Question 2. Is there a relationship between ward and demographic variables and staff perceptions of the violence prevention climate, as measured by the VPC-14?

- H3: The violence prevention climate as measured by the SA and PA subscales is viewed more positively by staff in low secure wards than medium secure wards
- H4: Staff perceptions of the violence prevention climate as measured by the SA and PA subscales are related to the gender of patients on the ward where they work
- H5: Staff perceptions of the violence prevention climate as measured by the SA and PA subscales are associated with staff demographic variables

Question 3. Is there a relationship between patients' demographic, admissions, clinical and violence variables, as measured by the VPC-14?

- H6: Patient perceptions of the violence prevention climate as measured by the SA and PA subscales are associated with demographic variables
- H7: The violence prevention climate as measured by the SA and PA subscales is viewed more positively by patients in low secure wards than medium secure wards
- H8: Patient perceptions of the violence prevention climate as measured by the SA and PA subscales are associated with the psychopathology of patients, as measured by the CGI-S
- H9: Patient perceptions of the violence prevention climate as measured by the SA and PA subscales are associated with whether patients have been recently violent, restrained or secluded

Data analysis

Subscales were excluded from analyses if there were missing data for one third or more items in each subscale (≥3 in the staff subscale and ≥2 in the patient subscale). Otherwise, the mean score for each subscale was calculated based on the available data.

Normality of data distribution was evaluated using Shapiro-Wilk tests in order to determine the appropriate use of parametric or non-parametric tests. Independent samples t-tests were carried out to identify significant differences in ratings of the SA and PA factors by staff and patients. To test the

homogeneity of variance a Levene's test was run for each t-test. In all cases equal variances were assumed unless otherwise stated.

Analyses were run to identify staff and patient variables association with SA and PA combined staff/ patient scores (independent samples t-tests for dichotomous variables and one-way ANOVAs for variables >2 groups). Effect sizes were calculated, using Hedges *g* plus 95% CIs due to unequal group sizes. Only medium or large effect sizes are reported. Due to limited knowledge of the area, Cohen's [33] rule of thumb for magnitude of effect size were applied (small 0.2, medium 0.5, large 0.8). Associations between continuous variables (e.g. age, staff experience, patient length of stay) and ratings of the SA and PA factors were calculated using Spearman's rank-order correlations. Ordinal variables were treated as continuous. Significance was set at 5% (p <.05). Variables with a p-value <.10 were entered into a multiple hierarchical regression analysis, to assess the relationship between the SA mean score, then the PA mean score and staff (demographic, ward level), then patient variables (demographic, clinical, admissions and violence variables). Assumptions of normality, linearity and homoscedasticity were all met. Analyses were all two-tailed and were performed using SPSS statistical software (version 25.0).

Findings

Sample characteristics

In total, 496 people (352 staff, 144 patients) met the inclusion criteria and were invited to participate and 421 completed scales were returned (326 staff, 95 patients), giving an overall response rate of 82% (staff 93%, patients 66%). For patients, the original sampling frame was all patients in adult mental health pathways, a total of 376 beds. Following advice from clinical teams, 144 patients were approached; the main reasons for exclusion were because they did not have capacity to consent and/or it was unsafe for the researcher to complete the interview. Five staff scales were missing more than one third of items from each subscale and were excluded from all analyses, leaving n= 321 for analysis. Five staff scales were missing more than one third of items from each subscale and were excluded from all analyses, leaving n= 321 for analysis. One patient-completed VPC-14 scale had missing data (≥3 items) for the staff subscale, and two completed VPC-14 scales had missing data (≥2 items for the patient subscale (one staff, one patient). These were all excluded casewise from the relevant analyses. Some staff declined to complete the demographic informationOf the patient participants, 82 (89%) consented to the research team accessing their electronic medical record to gather clinical information; all patients were included in the staff / patient comparisons and 82 were included in the patient modelling. A majority of staff participants were female (52%), there were more healthcare assistants than other staff (58%), and most were in low settings (63%), see Table 1. Most

patient participants were male (71%), had a diagnosis within the schizophrenia type group (35%), were white (71%) and in low settings (60%). There were 21 participants who had at least one incidence of violence (22%), 10 had been secluded (11%) and 14 restrained (15%) in the previous 12 weeks.

TABLE 1 PARTICIPANT CHARACTERISTICS

STAFF	*n* (%)	PATIENTS	*n* (%)
GENDER		**GENDER** [a]	
Male	115 (35.8)	Male	67 (70.5)
Female	166 (51.7)	Female	28 (29.5)
Did not respond	40 (12.5)	**AGE** [b]	
AGE		18-24	18 (22.0)
18-24	34 (10.6)	25-34	26 (31.7)
25-34	73 (22.7)	35-44	8 (9.8)
35-44	77 (24.0)	45-54	16 (19.5)
45-54	63 (19.6)	55+	15 (18.3)
55+	33 (10.3)	**DIAGNOSIS** [b]	
Did not respond	39 (12.1)	Schizophrenia type	33 (40.2)
ROLE		Personality disorder	28 (34.1)
Health care assistant	187 (58.3)	Personality disorder / Schizophrenia type	9 (11.0)
Qualified nurse	90 (28.0)		
Deputy ward manager	17 (5.3)	Other (inc. developmental, behavioural and mixed)	13 (15.9)
Ward manager	4 (1.2)		
Other (occupational therapist, assistant psychologist)	17 (5.3)	**ETHNICITY** [b]	
		White	67 (81.7)
		Other	13 (15.9)
Did not respond	6 (1.9)	Missing[c]	3 (3.7)
EXPERIENCE		**LEVEL OF SECURITY** [a]	
<5 years	100 (31.2)	Low	57 (60.0)
5-9 years	80 (24.9)	Medium	38 (40.0)
≥10 years	102 (31.8)	**VIOLENT** [b,d,e]	
Did not respond	39 (12.1)	Yes	21 (25.6)
LEVEL OF SECURITY		No	62 (75.6)
Low	202 (62.9)	**SECLUDED**[b,d]	
Medium	111 (34.6)	Yes	10 (12.2)
Did not respond	8 (2.5)	No	73 (89.0)
VPC-14 SCORES		**RESTRAINED**[b,d]	
SA Mean (SD)	4.10 (0.48)	Yes	14 (17.1)
PA Mean (SD)	2.75 (0.61)	No	69 (84.1)
		VPC-14 SCORES	
		SA Mean (SD)	3.44 (0.78)
		PA Mean (SD)	2.86 (0.61)
		CGI SCORE	
		Mean (SD)	3.2 (1.2)

[a]N=95, [b]N=82, [c]Information missing from patient records, [d]In last 12 weeks, [e]From MOAS data

Bivariate testing

Staff participants rated staff actions more highly: SA scores were higher for staff (4.10 ± .48) than for patients (3.44 ± .78), a difference of .66 (95%CI .53 to .79), $t(114.464) = 7.83$, $p < .000$. Conversely, patients rated patient actions more highly, with higher PA scores for patients (2.86 ± .61) than for staff (2.75 ± .61), although this difference did not meet set significance levels (p=.25; 95%CI -.26 to .07).

The difference between staff and patient views of staff actions demonstrated a large effect size, Hedges' *g* =1.18 (95%CI .94 to 1.43). Comparing views of staff on male and female wards showed a small to moderate effect size for both staff actions, Hedges' *g* =.32 (95%CI .07 to .58) and patient actions, Hedges' *g* =.41 (95%CI .15 to .67). For patients, level of security showed a small moderate effect size for staff actions, Hedges' *g* =.35 (95%CI -.06 to .77) and moderate for patient actions, Hedges' *g* =.51 (95%CI .10 to .93); this was not replicated by staff views which only showed a small effect size for each (Hedges' *g* <.20).

Regression models

For the prediction of combined staff action scores, most of the variance (19.7%) was explained by status as a member of staff or patient (Table 2). However, consideration of the gender status of the ward (male vs. female) and level of security explained an additional 2.2% of variance such that male wards were likely to have higher ratings for staff attitudes after taking into account respondent gender. For the prediction of patient actions respondent status was not significant; however inclusion of ward gender (male) and security level (low) predicted a small but significant amount of variance in the data (4.4%).

TABLE 2. HIERARCHICAL REGRESSION MODELS FOR COMBINED DATA VARIABLES ON VPC-14 SA AND PA SCORES

Predictors	Test statistics	*B*	SE	*β*	*t*	*P*	95% CI
		SA score (*n*=396)					
Model 1^{All_SA}	**adj. R^2=.20, F(1, 395)=98.27, p=.000**						
Staff/patient		-.66	.07	-.45	-9.91	.000	-.80, -.53
Model 2^{All_SA}	**adj. R^2=.22, F(2, 393)=38.38, p=.001**						
Staff/patient		-.66	.07	-.44	-9.92	.000	-.79, -.53
Male/female ward		-.18	.06	-.13	-2.79	.006	-.30, -.05
Level of security		-.11	.06	-.09	-1.95	.052	-.23, .00
		PA score (*n*=395)					
Model 1^{All_PA}	**adj. R^2=.00, F(1, 394)=1.78, p=.18**						
Staff/patient		.11	.08	.07	1.33	.18	-.05, .26
Model 2^{All_PA}	**adj. R^2=.04, F(2, 392)=7.13, p=.000**						
Staff/patient		.12	.08	.07	1.51	.13	-.04, .27
Male/female ward		-.25	.07	-.17	-3.42	.001	-.40, -.11
Level of security		-.15	.07	-.11	-2.16	.03	-.28, -.01

Gender of patients on the ward (male), staff gender (female) and age (PA: r_s(280) = .127, p .035) were the only staff variables significantly positively associated with perceptions of VPC-14 factors in bivariate tests. These variables were entered into the multiple hierarchical analyses (Table 3). Model

1^{Staff_SA} of the regression analysis demonstrated that staff demographic variables (age and gender) were not significantly associated with perceptions of SA. The full model, adding the gender of patients on the ward and level of security (Model 2^{Staff_SA}) to predict SA scores was statistically significant, but only explained 4.3% of the variability. Only staff gender and male/female wards were positively related to SA scores. Staff demographic variables were significantly related to perceptions of PA, Model 1^{Staff_PA}, and adding gender of patients on the ward improved the model, which explains 4.3% of the variance, Model 2^{Staff_PA}. In the final model age and male/female ward were positively related to PA scores.

TABLE 3. HIERARCHICAL REGRESSION MODELS FOR STAFF VARIABLES ON VPC-14 SA AND PA SCORES

Predictors	Test statistics	*B*	SE	*β*	*t*	*P*	95% CI
		SA score (*n*=266)					
Model 1^{Staff_SA}	**adj. R^2=.015, $F(2, 264)=2.89$, p=.06**						
Staff gender		.14	.06	.15	2.40	.02	.03, .26
Age		.00	.02	.01	.13	.90	-.05, 05
Model 2^{Staff_SA}	**adj. R^2=.04, $F(4, 262)=4.00$, p=.004**						
Staff gender		.18	.06	.19	2.98	.003	.06, .31
Age		-.01	.02	-.02	-.40	.69	-.06, .04
Male/female ward		-.20	.07	-.19	-2.90	.004	-.33, -.06
Level of security		-.04	.06	-.04	-.70	.49	-.17, .09
		PA score (*n*=266)					
Model 1^{Staff_PA}	**adj. R^2=.02, $F(2, 264)=3.26$, p=.04**						
Staff gender		.07	.08	.05	.87	.39	-.10, .19
Age		.08	.03	.15	2.45	.02	.01, .13
Model 2^{Staff_PA}	**adj. R^2=.04, $F(4, 262)=3.98$, p=.004**						
Staff gender		.12	.08	.09	1.48	.14	-.07, .22
Age		.06	.03	.12	1.94	.05	-.00, .11
Male/female ward		-.24	.09	-.18	-2.78	.006	-.35, -.03
Level of security		-.05	.08	-.04	-.67	.50	-.29, .02

B unstandardized regression weight, SE standard error, β standardized regression weight

The patient variables associated significantly with perceptions of the violence prevention climate were level of security (PA only), gender (SA), ethnicity (SA), and violent, secluded and/or restrained in the past 12 week (all PA only). As assessed by Spearman's correlations, CGI score (SA: $r_s(76) = -.28$, p .016, PA: $r_s(78) = -.30$, p .007) and length of stay (PA: $r_s(85) = .31$, p .004) were also associated with perceptions of the violence prevention climate. A Kruskal-Wallis H test identified no significant difference between diagnostic groups in the SA factor, $\chi^2(3)=4.46$, p=.216. There was a significant difference between these groups in the PA factor, $\chi^2(3)=9.18$, p=.027, however post-hoc analysis using Dunn's procedure with a Bonferroni correction for multiple comparisons identified no significant

difference. The significant variables were entered into hierarchical regression analyses for SA and PA scores separately: model 1 demographic variables, model 2 clinical variables, model 3 violence variables, model 4 admissions variables. Whether a patient had been violent, secluded or restrained were strongly correlated, so only violent was entered into the model as this was the variable with the largest group of participants (*n*=21).

Model $1^{Patient\_SA}$ showed that patient demographic variables, gender and ethnicity, were related to perceptions of SA (Table 4). Adding a clinical variable, CGI-S (model $2^{Patient\_SA}$) improved the model, which was further improved by the addition of a violence variable, whether the patient had been violent (model $3^{Patient\_SA}$). Inclusion of admissions variables, length of stay and level of security in the final step, model $4^{Patient\_SA}$, did little to improve the model and was not statistically significant. Therefore, the best model to explain patients' perceptions of SA is model $3^{Patient\_SA}$, which explains 8.3% of the variance. In this model none of the individual variables were significantly related to SA scores. Patients' demographic variables were significantly associated with their perceptions of patient actions, and each subsequent stage of the model improved the association, see Table 4. The final model, model $4^{Patient\_PA}$, explains 19.5% of the variance; only length of stay was positively related.

TABLE 4. HIERARCHICAL REGRESSION MODELS FOR PATIENT VARIABLES ON VPC-14 SA AND PA SCORES

Predictors	Test statistics	*B*	SE	*β*	*t*	*P*	95% CI
		SA score (*n*=70)					
Model 1$^{Patient\_SA}$	**adj. R^2=.06, F(2, 67)=3.21, p=.05**						
Gender		-.41	.22	-.22	-1.84	.07	-.85 to .03
Ethnicity		.38	.25	.18	1.52	.13	-.12 to .87
Model 2$^{Patient\_SA}$	**adj. R^2=.08, F(3, 66)=3.06, p=.03**						
Gender		-.42	.22	-.22	-1.91	.06	-.85 to .02
Ethnicity		.37	.25	.18	1.53	.13	-.12 to .86
CGI-S		-.15	.09	-.19	-1.62	.11	-.33 to .03
Model 3$^{Patient\_SA}$	**adj. R^2=.08, F(4, 65)=2.56, p=.05**						
Gender		-.42	.22	-.23	-1.94	.06	-.86 to .01
Ethnicity		.45	.26	.22	1.77	.08	-.06 to .96
CGI-S		-.20	.10	-.25	-1.91	.06	-.41 to .01
Violent		-.27	-.14	-.14	-1.03	.31	-.79 to .25
Model 4$^{Patient\_SA}$	**adj. R^2=.06, F(6, 63)=1.75, p=.13**						
Gender		-.36	.24	-.19	-1.47	.15	-.84 to .13
Ethnicity		.44	.26	.21	1.67	.10	-.09 to .96
CGI-S		-.19	.11	-.24	-1.82	.07	-.40 to .20
Violent		-.26	.27	-.14	-.98	.33	-.80 to .27
Level of security		-.14	.21	-.08	-.65	.52	-.57 to .29
Length of stay		.00	.03	.01	.10	.92	-.05 to .06
		PA score (*n*=71)					
Model 1$^{Patient\_PA}$	**adj. R^2=.09, F(2, 68)=4.42, p=.02**						
Gender		-.44	.23	-.22	-1.93	.06	-.89, .01
Ethnicity		.52	.26	.23	2.03	.05	.01, 1.03
Model 2$^{Patient\_PA}$	**adj. R^2=.14, F(3, 67)=4.68, p=.005**						
Gender		-.44	.22	-.22	-2.00	.05	-.89, .00
Ethnicity		.53	.25	.24	2.11	.04	.03, 1.02
CGI-S		-.20	.09	-.24	-2.17	.03	-.38, -.02
Model 3$^{Patient\_PA}$	**adj. R^2=.14, F(4, 66)=3.85, p=.007**						
Gender		-.44	.22	-.22	-1.97	.05	-.88, .01
Ethnicity		.44	.26	.20	1.68	.10	-.08, .96
CGI-S		-.14	.10	-.17	-1.36	.18	-.35, .07
Violent		.30	.27	.15	1.14	.26	-.23 to .83
Model 4$^{Patient\_PA}$	**adj. R^2=.20, F(6, 64)=3.83, p=.003**						
Gender		-.21	.24	-.11	-.90	.37	-.68, .26
Ethnicity		.46	.26	.21	1.79	.08	-.05, .97
CGI-S		-.12	.10	-.14	-1.17	.25	-.32, .08
Violent		.23	.26	.12	.90	.37	-.29, .76
Level of security		-.25	.21	-.15	-1.22	.23	-.67, .16
Length of stay		.06	.03	.23	2.03	.05	.00, .11

B unstandardized regression weight, SE standard error, β standardized regression weight

Discussion

This study explored associations between the violence prevention climate, as measured by the VPC-14, and staff and patient characteristics. Furthermore, staff and patient views were compared. Whilst staff had a more positive view of staff actions related to the violence prevention climate, patients had a more positive view of patient actions, however the latter finding was not statistically significant.

Staff viewing their own actions more positively than patients is consistent with findings from other studies of ward atmosphere. Two previous studies in the same setting found that staff gave higher ratings of therapeutic hold, as measured by the EssenCES, than patients [7,25], as have studies in other settings [8,12]. Therapeutic hold is described as 'the extent to which the climate is perceived as supportive of patients' therapeutic needs' [5 p.590], and has items relating to staff actions . That staff rate more highly the dimensions that reflect the positive aspects of their role (i.e. staff actions in the VPC-14) and lower on those that could have negative implications (i.e. staff control in the WAS) has been identified by other researchers [4,6]. It is of note that whilst staff have a more positive view of their own actions than patients, as shown by higher SA scores, the same is true for patients, who rate their actions more highly than staff in the VPC-14. This difference was not statistically significant and so should be viewed with caution, but is similar to previous studies, both in this setting [7] and others [8,12], all of which found patient cohesion, as measured by the EssenCES, was rated more highly by patients than staff.

The current study found that both staff and patient actions are rated more highly on low secure wards compared with medium secure wards, although this difference was below the set significance level for patients' perceptions of staff actions. It was expected that participants would rate staff actions lower on medium secure wards, where conditions are more restrictive, and therefore more opportunities for conflict between staff and patients arise. This is borne out by Dickens et al. [34], who found that within this setting, violent incidents were over ten times more likely in medium secure wards when compared with low secure wards. Hui [8] found that staff rated patient cohesion, a proxy for patient actions, as lower in the admissions ward, when compared with treatment and pre-discharge wards. This is consistent with the differences identified by Long et al. [25] with staff and patients scoring patient cohesion as higher on a medium-secure treatment ward and low-secure wards than a medium-secure admissions ward. The reasons for these differences could be two-fold; firstly patients on treatment wards and in low secure settings may be less disruptive than those in medium-secure admissions wards, and secondly, group dynamics might be affected by the length of time patients are on a ward. High numbers of patients being transferred from prison to medium-secure admissions wards, coupled with patient populations with low levels of cognitive functioning and high levels of assaultive behaviour [35] are likely to reduce ratings of patient cohesion. It is also

likely that patient cohesion is related to behaviours learned over the course of an inpatient stay [25]. Again, future research examining differences in perceptions of patient actions by type of ward is needed to identify whether these differences are also present in perceptions of the violence prevention climate.

The model testing staff's views identified that only a small amount of the explained variance in staff actions (Model 2^{STAFF_SA}) and patient actions (Model 2^{STAFF_PA}) scores was accounted for, which comprised staff gender and age, and the gender of patients on the ward they worked on, being 4.2% and 3.8% respectively. There must therefore, be other factors that affect staff perceptions of the violence prevention climate. This finding is not surprising when viewed in the wider context of research; staff age, gender, educational level and work experience have been shown to have no influence in the perception of ward atmosphere as measured by the WAS [36], and staff gender and role did not account for any differences in ratings of EssenCES subscales [8].

Patient variables accounted for substantially more variance in staff actions and patient actions scores when compared to staff variables; Model $3^{PATIENT\_SA}$, which included gender, ethnicity, CGI-S scores and whether the patient had been violent, accounted for 8.3% of the variance in staff actions, and Model $4^{PATIENT\_PA}$ (gender, ethnicity, CGI-S score, violent, level of security and length of stay) for 19.5% of the variance in patient actions. No variables were identified as significant predictors of perceptions of staff actions, and only length of stay significantly predicted patient actions, however the sample size was not deemed adequate for this test [37], so the finding should be viewed with caution.

That individual differences between patients, and similarly between staff, accounted for only a small amount of variance in each of the factors, should be viewed as a positive finding. As Friis [5 p.595] states, 'If many patients had different perceptions of a ward… one could question whether a ward atmosphere really exists'. Therefore calculating mean scores should give an estimate of how most patients or staff view the violence prevention climate. No environmental or organisational factors were captured by this study, but it is possible that these are more important than individual patient or staff factors. These could include: number of patients on the ward, staff to patient ratios, the presence of non-regular ward staff, the physical environment of the ward, and patient access to therapeutic and recreational activities. These factors have all been associated with rates of aggression; increased staff-patient ratios [38,39], daytime access to bedrooms [40], and increased activities [41] have all been associated with lower rates of aggression, whilst overcrowding may increase the risk of violence towards staff [42].

Limitations

There were some issues with the data collected on patient variables. The CGI as a scale provides up-to-date information on patient presentation; this was completed for each patient by a single practitioner who had no previous experience of using the scale, which could affect the reliability of this as a measure. The tests of restrained and secluded patients may be underpowered and so unable to test differences, due to the small numbers of people in the restrained and secluded arms of the study. We felt it was important to compare male and female wards, however we recognise that where patient data is included this is confounded by patient gender.

Most patients included in this study either had a primary diagnosis in the F2 or F6 categories; whilst this is reflective of the patients who reside in secure settings [43,44], it means that the findings may not be generalizable to wider mental health inpatient settings, where schizophrenia is the most common diagnosis on admission, followed by mood disorders [45].

Finally, due to missing VPC-14 scale data for both staff and patients, staff declining to give demographic information and patients not consenting to the researchers accessing their electronic records, no analyses were conducted on the whole sample. In the regression models, from a total of 421 participants' completed VPC-14 scales, n=396 (94.1%) and n=395 (93.8%) participants were included in the SA and PA models respectively; for staff models 266 (82.9%) participants were included in the SA and PA models from 321 total participants; and for patient models 71 (86.6%) and 70 (85.4%) participants were included in the SA and PA models respectively, from 82 total participants. Using the rule of thumb for multiple correlations suggested by Tabachnick and Fidell [37], $N \geq 50+8m$ (where m is the number of independent variables, sample size is adequate except for the patient models which would need at least 98 cases. Similarly, only the patient sample does reach adequacy for testing individual predictors, using the $N \geq 104+m$ rule. Therefore the patient regression models should be treated with appropriate caution and further testing with a larger sample size is required to confirm or refute the findings.

Conclusions

In line with other research on the ward environment [4,7,12,36], patients and staff perceive the violence prevention climate differently, with staff having a more positive view of the actions that staff take to create a positive violence prevention climate and patients viewing the actions of the patient group more positively. This seems to be the status quo of perceptions of ward atmosphere, but there is no reason why changes to the ward environment cannot be investigated to identify how to reduce these differences. It is not unreasonable to assume that wards where staff view patient actions more positively, and vice versa, provide better living and work environments than those that follow the

status quo. Further testing of this assumption would be easily undertaken by measuring not only the violence prevention climate, but also the overall ward atmosphere, and comparing this with patient and staff satisfaction of the ward. These findings have implications for staff in clinical settings. Perhaps they need to better articulate their role in violence prevention to patients so that patients' views on staff actions are improved. However, staff also need to recognise the role that patients play in prevention violence. It is likely that some of the discrepancy between staff and patient perceptions is based on poor communication, with neither group fully articulating the role they play in preventing violence. Ward community meetings are a means of bringing both groups together and have been shown to be effective in reducing incidents of violence [46]. Future research should investigate whether the introduction of community ward meetings decreases the disparity in perceptions of the violence prevention climate.

The small amount of variance in both patient and staff perceptions of the violence prevention climate accounted for by individual variables suggests that it is a valid construct i.e. that despite individual differences, groups of patient and staff have similar perceptions, at least as measured by the VPC-14. Further ward level testing would go some way to validating this claim. Opportunities for further research have been identified by examining the limitations of the current study: obtaining larger patient sample sizes to identify differences of the views of patients who have been recently restrained or secluded and those who have not, and repeating VPC-14 administration at regular time intervals to assess the temporal stability of the violence prevention climate.

Conflict of interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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